

Exam Technique

Many students in University Mathematics exams seem to lack appropriate examination technique. Here are a few tips (many obvious) to help you in your exams: much of this is applicable to other courses as well.

Preparation

You will doubtless have been told this many times, but the best and most basic requirement of passing exams is *preparation*. This does not mean cramming the night before, but working at the material over the course of the whole session.

You should organise a final timetable for studying for your exams as soon as the preliminary exam timetable is published — you can expect the final exam timetable to be the same as the draft through most of your time at UNSW. Allow yourself some time to relax: if you make a drastic change to your normal routine you will study much less effectively.

Cramming is a bad move for two reasons: firstly, you don't have time to see how the material fits together, and how it fits with earlier courses. Thus you miss the opportunity to gain easy marks from work you should have already mastered. Secondly, and more importantly, if you lose sleep the night before the exam, then much that you have attempted to learn will be lost. Research has shown that a good night's sleep after proper preparation not only makes exams much less stressful, but improves performance.

The School of Mathematics sets exams to test what you know, not what you do not know. It is very easy to set impossibly difficult exams, but we do not set out to do that. In all our major courses, almost all the questions in the exam are very close to things you should have seen before, or are applications of methods you have been taught. If you are adequately prepared then you will pass very easily. There may be some trickier subparts designed to test deeper understanding — you will need to do these to get a higher grade.

Revise your lecture notes and the tutorial problems first. Check over the class tests you have done to see where you went wrong and where you went right. If you have trouble, consult your tutor, lecturer or another member of staff: we often make up rosters for the large subjects so someone should be available. Leave one complete exam untouched and use it as your final revision — try to do it under exam conditions.

Two Exams on One Day

If you have a second exam scheduled for the same day, then your preparation needs to be very carefully thought out. Do not expect to be able to successfully cram any major revision work in the time between them. Try to unwind from one exam (have a light meal) and then do a little reading before the second one: prepare a 1 or 2 page “summary sheet” to read in the gap — do not try to carry a mass of books around to one exam in order to revise for a second.

Reading Time

Make sure you turn up on time to make maximum use of the reading time. Getting to an exam late will needlessly increase your stress levels.

Making effective use of the allowed reading time seems to be a mystery to most students. Unlike HSC exams, UNSW mathematics exams are generally designed to follow the order the material is taught. The questions do not get progressively harder: it is quite likely that later questions are overall much easier than earlier ones. We have usually tested the basic parts of the earlier material in the class tests already.

So, during the reading time you should go through the paper and mentally pick out the parts of each question that you think will be easiest, or you know you can do. Think about how you would tackle these questions: just because you cannot write during the reading time does not mean you cannot think. Then put some rough order on the harder parts in the same way.

Doing the exam

If you have identified which parts are easiest during the reading time, then start on them. We usually ask you to put each question in a separate book, *make sure you do this*. As long as you put everything in the right book, the order you do the parts of each question is irrelevant. They will all get marked.

Apart from the obvious advantage of racking up the easy marks quickly, doing this will help calm you down if you are nervous. It is not necessarily a bad thing to have some nerves before an exam as it can “key you up”, but avoid panicking. If you do start to panic *stop working and calm yourself down*.

After the easier parts, go through the rest of the paper, leaving the very hard parts to the end. This does not mean you should leave subpart (c), for example, unattempted, as if you lose the flow of one part of a question you will waste time recovering that flow when coming back to it.

In all cases (easy or hard questions), do not waste time struggling with something and getting nowhere if there are other parts of the paper undone. If a calculation is going on too long, then it is probable that you have made a mistake, either in the calculation itself or in the method you are using to do it: stop, look back, think again.

If you successfully get through the easier parts first, you should find yourself having correctly answered well over half the paper in less than half of the time allowed (which is usually a pass), giving yourself time to think through and do any trickier parts, improving your grade and/or making certain of a pass.

Hints in the Wording

Although we seldom give explicit hints, there are sometimes clues in the questions. Questions are usually broken in parts, and often each part is broken into subparts. Sometimes these subparts have no connection, or a superficial connection (for example, using the same

information or same story) but sometimes one part will naturally follow from another. If a subpart uses the phrase “hence or otherwise”, then this is a clue that the result or working of an earlier part will be useful, or even necessary. In this case, it will pay you to spend some time looking for this connection if it is not immediately obvious. Just “hence” on its own means you must use the previous work, as we are trying to test some specific idea or technique.

Similarly, of course, when we tell you to use a particular method (e.g. row reduction, partial fractions), then you will lose most or all of the marks if you do not use that method: we are testing your knowledge of that method. Wording like “using a trig substitution or otherwise...” is a hint that the method suggested is the easiest way, but another method is acceptable.

Marks

Some exams have marks given for each subpart. This is another clue — a subpart worth 2 marks should not take you 15 minutes and 3 pages of calculation. However, this does not always work the other way around. A subpart worth 5 marks might only need a very short answer: the marks might be for displaying a deep understanding (or they could be for a long calculation).

Making mistakes

Even if you know exactly what you are doing in a particular problem, it is always possible to make some sort of silly mistake (losing a minus sign is a common one). Doing so does not necessarily mean losing marks. For example, if you are asked to invert a matrix and copy it down with one entry wrong then you could still get full marks, unless you make the problem easier than the one set (not likely in this example).

On the other hand, getting the minus sign wrong in an integration by parts is a more serious mistake which will lose marks. Inventing your own problem (however hard it is) will lose all the marks.

Summary

- Plan your preparation
- Answer easy parts first
- Read the questions carefully
- DON'T PANIC

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